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10/667,479	09/23/2003	Laurent C. Bissonnette	S222-017-US01	9070
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HANIFY & KING PROFESSIONAL CORPORATION 1055 Thomas Jefferson Street, NW Suite 400 WASHINGTON, DC 20007			EXAMINER	
			HSU, RYAN	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/667,479	Applicant(s) BISSONNETTE, LAURENT C.
	Examiner RYAN HSU	Art Unit 3714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 04 December 2009.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-9, 11-18 and 24-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-9, 11-18 and 24-29 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/06)
 Paper No(s)/Mail Date 10/07/09
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date _____
- 5) Notice of Informal Patent Application
- 6) Other: _____

DETAILED ACTION

In response to the amendments filed on 12/04/2009, claims 1, 12, and 24 have been amended and claim 10 has been canceled and claim 29 has been newly added. Claims 1-9, 11-18, and 24-29 are pending in the current application.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-9, 11-18, and 24-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (US 5,342,054) and McTeigue et al. (US 5,372,365) and Ogawa et al. (US 4,451,043), and Yamazaki et al. (US 5,447,314) and Nesbit et al. (US 6,983,637) and in further view of Kiraly (US 2004/0032970 A1).**

Regarding claims 1 and 24, Chang et al. teaches an imaging system for determining the kinematics or movement of an object, comprising: a trigger positioned in front of a target area through which an object passes (*see sensor array [20,22] of Fig. 1 and the related description thereof*); and a camera operatively connected to a trigger to capture optical images of one or more objects (*see camera 26, 28, and 30 of Fig. 1 and the related description thereof*). Furthermore, Chang teaches of an imaging device operatively connected to a trigger via the computing device that determines the position and velocity for the object based on the output from the receiver and is capable of calculating a dwell time for consecutive optical images (*see Figs. 1-2 and the respective related descriptions thereof*). Additionally, Chang teaches a system

that uses a trigger to initiate a process that determines the movement of an object swung by a left or right handed player. However, Chang et al. is silent with respect to a trigger that uses ultrasonic waveforms.

In a related golfing system patent, McTeigue et al. teaches a system that provides guidance for a player using sensors to indicate and monitor the movement of the player. McTeigue's system teaches different convenient methods of transmission devices to communicate user signals (*ie: a trigger*) may take the form of analogue or digital signals by means of radio frequency or other electromagnetic wave forms, e.g. infrared or ultrasonic transmitters and receivers common in the golf apparatus arts(*see col. 10: ln 25-56*). As McTeigue teaches that the communication of use signals can take the form of electromagnetic wave, e.g. infra-red or ultrasonic; could be used (*see col. 10: ln 15-30*). Therefore one would be motivated to implement an ultrasonic device as a common triggering device alternative, it would have only taken one of routine skill in the art to recognize its equivalence to that of the sensor triggering array taught in Chang, Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the reference of Chang with that of McTeigue to incorporate an art recognized equivalent into the triggering device to form an ultrasonic trigger instead of the disclosed sensor array of Chang. However, McTeigue and Chang suggest the use of and equivalence of an ultrasonic trigger with that of the infra-red and optical triggers, but does not specifically teach of an embodiment that uses an ultrasonic trigger.

In an analogous patent, Ogawa et al. teaches a golf trainer that uses sensors arranged in an array that processes the output by the sensors to display various information relative the club swing of a user. Ogawa teaches the use of using a ultrasonic detect means as an art equivalent to

the three magnetic sensors in the basic embodiment as well as teaching various other types of equivalent detector means (*see '4,451,043', col. 4: ln 30-36*). One would be motivate to incorporate the features and design of ultrasonic sensors as an art equivalent sensor type as the photosensors taught in Chang at the time the invention was made. As one would expect the two types of sensors to perform equally in being able to initiate the tracking process it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Ogawa with that of Chang and McTeigue as an ultrasonic trigger to be an obvious alternative to the photosensor triggering device.

In another gaming patent, Yamazaki et al. teaches a golf ball locating system that incorporates an ultrasonic sensor that relays information to remote device that analyzes the "intensity data" and the range and direction of the ball. One would be motivated to incorporate the teachings of Ogawa and Yamazaki into that of the Chang patent in order to accurately provide feedback on a golf swing and flight of a golf ball in order to allow a player to improve a user's golf stroke (*see '5,447,314', col. 2: ln 10-col. 3: ln 50*). Additionally, the two references teach the incorporation and implementation of ultrasonic triggers beings used to trigger signals in a system and therefore are old and well known in the art at the time the invention was made to be incorporated to a golf swing tracking system. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the ultrasonic triggers taught in Ogawa and Yamazaki into that of Chang at the time the invention was made.

In an analogous golf system, Nesbit teaches an apparatus that evaluates and images golf club heads. Specifically Nesbit teaches the imaging system to be initiated by an ultrasonic trigger. This occurs when the ball is passed by or through the sensor which then initiates the

computing process to collect the data, much as how the optical sensors of Chang are used to signal and initiate the data necessary to produce the kinematics of an object (*see col. 6: ln 33-40*). One would be motivated to incorporate the features of an ultrasonic sensor as it is an effective means of communicating user signals as is already well taught in the art (*see McTeigue, col. 10: ln 15-40*). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Nesbit with that of McTeigue and Chang in order to produce a golf practice apparatus that provides recording and instant playback of a video image of a golfer's swing being initiated by an ultrasonic trigger. However, Nesbit, Ogawa, Yamazaki, McTeigue and Chang are silent with respect to providing the ultrasonic trigger to be positioned to determine the movement of an object swung by a left or right handed player.

In an analogous golfing patent, Kiraly teaches a golf imaging system that uses a trigger portion of a camera window frame for monitoring when the golf ball or golf club moves or comes into view. Kiraly teaches that the camera and trigger is placed either on the left or right of the camera window depending on the placement of the camera with respect to the golf player (*see paragraph [0073]*). One would be motivated to incorporate such a feature in order to provide the system to be adaptable to both left and right handed players as they will address the ball differently from one another. Additionally, as the instant system is adaptable for humans the only way in which people are oriented to swinging a club is being designated between a right or a left handed player. Therefore it would have been obvious to try adapting the system for both types of players. *In arguendo*, Kiraly would provide the expected result of adapting the golf system for all types of golfers and therefore would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Kiraly with that of

Chang, McTeigue, Yamazaki, Ogawa and Nesbit to have the ultrasonic trigger imaging system to be capable of analyzing swings from a left or a right handed player.

Regarding claims 12, Chang et al. teaches a system for simultaneously measuring golf club properties and golf ball properties during a golfer's striking of a golf ball, the system comprising: a first camera and a second camera, each of the first and second cameras focused towards a predetermined field of view (*see camera [28, 30] of Fig. 1 and the related description thereof*); a golf club having at least one optical marker; a golf ball within the predetermined field of view (*see Fig. 1 and the related description thereof*); and a trigger that emits waves along a path of a golf club swing, the trigger capable of estimating the golf club speed (*see Fig. 7 and the related description thereof*). Furthermore, Chang teaches wherein the first and second cameras capture optical images of at least one of the golf ball and golf club based on the estimated golf club speed (*see col. 7: ln 1-15*). However, Chang et al. is silent with respect to a trigger that uses ultrasonic waveforms.

In a related golfing system patent, McTeigue et al. teaches that convenient methods of transmission devices to communicate user signals (*i.e.: a trigger*) may take the form of analogue or digital signals by means of radio frequency or other electromagnetic wave forms, e.g. infrared or ultrasonic transmitters and receivers (*see col. 10: ln 25-56*). As McTeigue teaches that one would be motivated to implement an ultrasonic device as a common triggering device alternative, it would have only taken one of routine skill in the art to recognize its equivalence to that of the sensor array taught in Chang. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the reference of Chang with that of

McTeigue to incorporate an art recognized equivalent into the triggering device to form an ultrasonic trigger instead of the disclosed sensor array of Chang.

In an analogous patent, Ogawa et al. teaches a golf trainer that uses sensors arranged in a case that processes the output by the sensors to display various information relative to a club swing of a user. Ogawa's trigger is positioned in front of a target area through which a golf club passes, the ultrasonic trigger emitting periodic pulses (ie: inherent nature of how sensors work and the periodic pulses is dependent upon the wavelength it is attempting to sense). Ogawa teaches the use of using a ultrasonic detect means as an art equivalent to the three magnetic sensors in the basic embodiment as well as teaching various other types of equivalent detector means (*see '4,451,043', col. 4: ln 30-36*). In another gaming patent, Yamazaki et al. teaches a golf ball locating system that incorporates an ultrasonic sensor that relays information to remote device that analyzes the "intensity data" and the range and direction of the ball. One would be motivated to incorporate the teachings of Ogawa and Yamazaki into that of the Chang patent in order to accurately provide feedback on a golf swing and flight of a golf ball in order to allow a player to improve a user's golf stroke (*see '5,447,314), col. 2: ln 10-col. 3: ln 50*). Additionally, the two references teach the incorporation and implementation of ultrasonic triggers being used to trigger signals in a system and therefore are old and well known in the art at the time the invention was made to be incorporated to a golf swing tracking system. As a result of the use of triggers the sensors would incorporate a time period between the periodic pulses as being greater than or equal to twice the distance of the trigger to the target area to signify when a movement has occurred. Thus it would have been obvious to one of ordinary skill in the art at the time the

invention was made to incorporate the ultrasonic triggers taught in Ogawa and Yamazaki into that of Chang at the time the invention was made.

In an analogous golf system, Nesbit teaches an apparatus that evaluates and images golf club heads. Specifically Nesbit teaches the imaging system to be initiated by an ultrasonic trigger. This occurs when the ball is passed by or through the sensor which then initiates the computing process to collect the data, much as how the optical sensors of Chang are used to signal and initiate the data necessary to produce the kinematics of an object (*see col. 6: ln 33-40*). One would be motivated to incorporate the features of an ultrasonic sensor as it is an effective means of communicating user signals as is already well taught in the art (*see McTeigue, col. 10: ln 15-40*). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Nesbit with that of McTeigue and Chang in order to produce a golf practice apparatus that provides recording and instant playback of a video image of a golfer's swing being initiated by an ultrasonic trigger.

Regarding claim 2, Chang et al. teaches an imaging device wherein the object comprises at least one of a golf ball and a golf club (*see golf ball [102(a-b) and 100(a-b)] of Fig. 7 and the related description thereof*).

Regarding claims 3-4, 9, 13, 17-18, and 27-28, McTeigue et al. teaches a method wherein the frequency of the ultrasonic sound waves is between 10 and 500 KHz as this is inherent with any ultrasonic device since this is the optimum range in which ultrasonic sound waves travel (*further evidenced by Wikipedia's Ultrasound*). Additionally, McTeigue's ultrasonic transmissions inherently comprise sound waves that have periodic pulses that in order to be classified as 'ultrasonic' have a periodic duration of between about 10 and 5000 microseconds.

As a periodic pulse is the time in which it takes a waveform to travel from peak to peak. This is calculated using the basic physic formula to determine frequency which is $f = 1/T$ [period]. A simple translation of the frequency range that derives the ultrasound bandwidth would derive a period pulse in the range required by the applicant's invention.

Regarding claims 5-7, 14-15, and 25-26, McTeigue et al. teaches an ultrasonic imaging method however is silent with respect to an area of sonification having a diameter between about six inches and about two feet and beam angle that is between 1 and about 30 degrees. It is well known in the art that the propagation of waves deteriorates over a certain distance and degrees. As is with most wave emitting devices they radiate the signal in a circular shape. As the farther a wave propagates the farther from the original source the weaker the signal becomes. In the art of sound imaging in order to produce a useable image a certain optimal range must be kept in order to produce an effective result. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to limit the use of the imaging device to the discovered effective range of the invention (*ie: 1 and about 30 degrees and 5 and about 15 degrees*). Furthermore, it has been held that discovering optimum ranges and values of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claims 8, 11, and 16, McTeigue et al. teaches a ultrasonic device that inherently emits sound waves periodically (*see col. 10: ln 25-56*). Additionally, McTeigue teaches a periodic sound wave that comprises pulses, wherein the time period between the pulses is greater than or equal to twice the distance from the ultrasonic trigger to a target area (*see col. 10: ln 25-56*).

Regarding claim 29, Chang and McTeigue teaches an imaging device that comprises using a triggering device to initiate a imaging system and McTeigue teaches the use of a single ultrasonic trigger (*see trigger [20, 22] of Fig. 1 and the related description thereof*).

Response to Arguments

3. Applicant's arguments filed 11/15/2009 have been fully considered but they are not persuasive. Applicant's representative makes the following arguments:
4. *The Cited Combination of References Fails to Disclose or Suggest all of the Features of the Present Invention:*
5. The applicant's representative argues that Chang in combination McTeigue fails to meet the limitation of a "trigger". The Examiner respectfully disagrees. Chang teaches the use of a photosensor (ie: light beam) as a triggering device. McTeigue teaches various types of sensors that may be used for communication signals in a computing device. A trigger is a type of communication signal to indicate to the system that it should perform a process. The combination of the two would be an obvious matter of modifying interchangeable art equivalents with one another. The incorporation of Ogawa further teaches this idea of providing an ultrasonic trigger in place of the photosensor trigger of Chang. While the applicant notes that Ogawa and Yamasaki accomplishes its sensor using multiple sensors to compute the velocity of the club head, the triggering device of Chang still is capable of incorporating the feature with a single sensor and thus still in combination meets the limitations of the instant claims.
6. With respect to Nesbit and Kiraly, these analogous patents teach the use of sensors to create tracking and monitoring of a persons swing through the use of acceleration and deflection measurements which still use sensors that have been the heart of the issue. The Examiner

respectfully maintains his position as through a reading and interpretation of the applicant's instant independent claims it appears that the system is taught by the imaging system of Chang that has been modified to incorporate a ultrasonic trigger as opposed to the photoelectronic sensor. The prior art references of McTeigue, Ogawa, Yamasaki, and Kiraly show different embodiments where an ultrasonic sensor has been used to relay communication signals in a golf training device which it is well known in the art that one of ordinary skill in the art would understand that a sensor to relay communication signals could easily be swapped out and used as a trigger as required by the instant claims because these type of sensors are art specific equivalents.

7. *The Examiner Fails to Provide a Motivation to Combine the References*

8. The Examiner respectfully disagrees with the Applicant's representative with regard to failing to cite a motivation to combine the references. Within the body of the rejection enclosed above for each independent reference the Examiner has provided a motivation for incorporating the teachings. For example in the example cited by the applicant's representative, McTeigue teaches the use of an ultrasonic trigger as a sensor that transmits the occurrence of an event thus teaching the communication of signal as used by analogous golf imaging systems. The teaching specifically made by McTeigue is towards the various type of sensors that can be used in analogous golf swing analyzing devices. Thus it would have been obvious to modify Chang with that of McTeigue to incorporate the use of an ultrasonic sensor. With respect to the applicant's arguments towards Kiraly, the system is capable of incorporating its use with that of an object swung by a left or right handed golfer. Furthermore it would have been an obvious design choice

in order to incorporate that feature in order to provide the expected result of having a system be available for all golfers.

9. *The Proposed Combination of Ogawa and Chang Destroys the Principle of Operation of Ogawa:*

10. The applicant's representative argues that Ogawa used in combination with Chang destroys the Principle of Operation of Ogawa. The Examiner respectfully disagrees as both systems teach the use of sensors to evaluate and compute the velocity of a golf club. Chang has the additional novel improvement of having a system that actually provides optical images of the player swinging the club or object as opposed to Ogawa which teaches a system that just monitors and tracks the velocity of the club head. The principle of Operation would not be destroyed by the incorporation of Ogawa as it further elaborates how different types of sensors and velocities may be measured when a player swings an object.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RYAN HSU whose telephone number is (571)272-7148. The examiner can normally be reached on 9:00-17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Hotaling can be reached on (571)272-4437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John M Hotaling II/
Primary Examiner, Art Unit 3714

RH
February 5, 2010